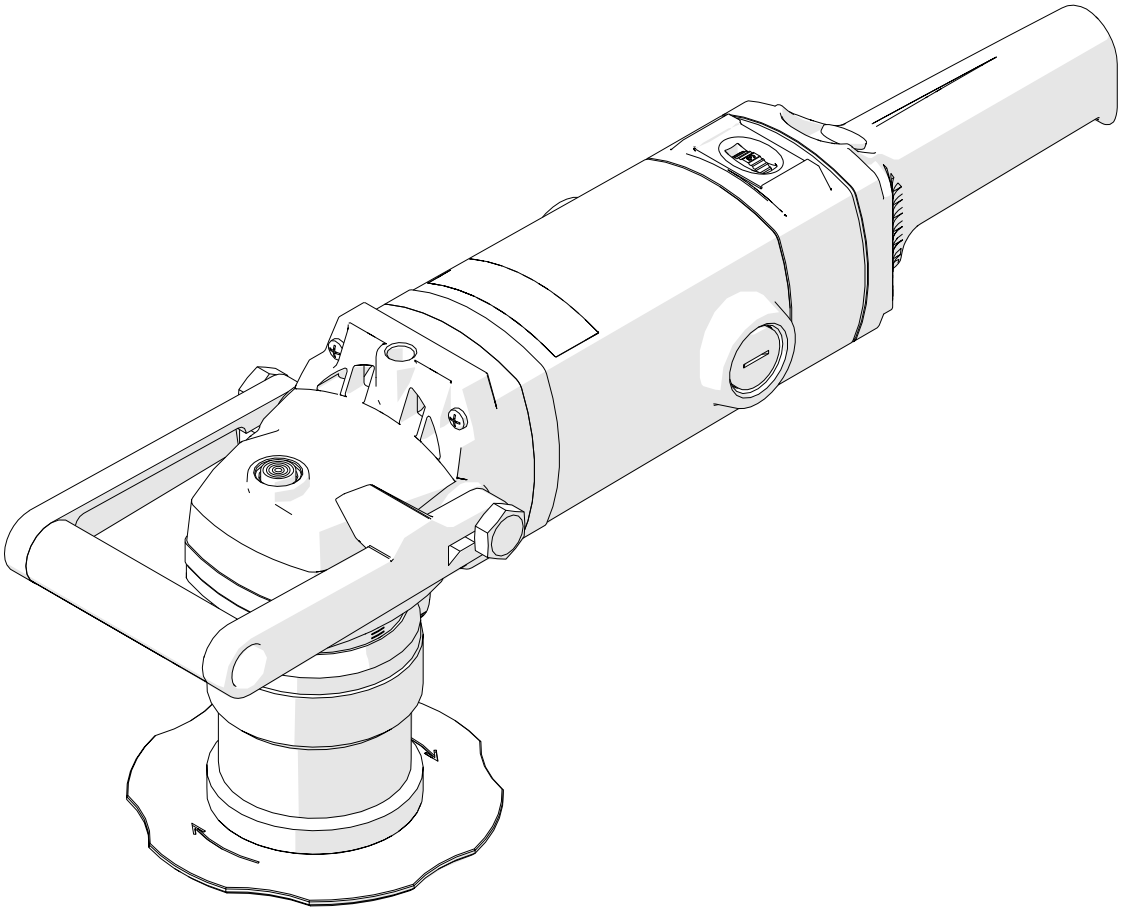
OPERATOR'S MANUAL

BM-16

BEVELLING MACHINE



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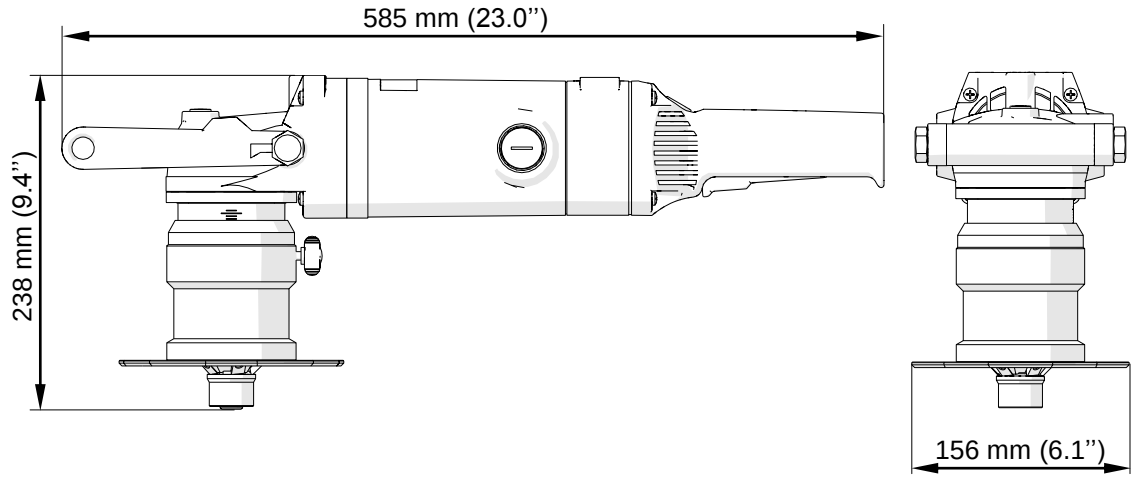
Read Operator's Manual before starting

1. GENERAL INFORMATION

1.1. Application

The BM-16 Bevelling Machine is designed for milling edges of plates and pipes made of steel, aluminum alloys, brass, or plastics. Depending on used milling head the machine allows for bevelling materials of the minimum thickness of 1.5 mm (0.06'') at the angle of 20°, 22.5°, 30°, 37.5°, 45°, 50°, 55°, 60°, or 65° and with the maximum bevel width of 16 mm (0.63''). It also allows for rounding edges using the radius of 3, 4, or 5 mm. The minimum diameter of a hole to be machined is 40 mm (1.57'').

1.2. Technical data



Voltage	~ 220–240 V, 50–60 Hz ~ 110–120 V, 50–60 Hz
Power	2200 W
Rotational speed (without load)	1800–5850 rpm
Protection level	IP 20
Protection class	Class II
Maximum bevel width	b = 16 mm (0.63'', Figure 1)
Bevel angle (depending on milling head)	ß = 20°, 22.5°, 30°, 37.5°, 45°, 50°, 55°, 60°, 65° (Figure 1)
Minimum material thickness for bevelling	1.5 mm (0.06'')
Minimum machining hole diameter	40 mm (1.57'')
Rounding edges	R3, R4, R5 (Figure 1)
Noise level	Above 70 dB
Vibration level	2.3 m/s^2 (7.5 ft/s) Category III (PN-90/N-01357) Machine harmful for health. Take periodic breaks during operation.
Dimensions	585 mm (L) × 156 mm (W) × 238 mm (H) 23.0'' (L) × 6.1'' (W) × 9.4'' (H)
Required ambient temperature	0–40°C (34–104°F)
Weight (without milling head)	10 kg (22 lbs)

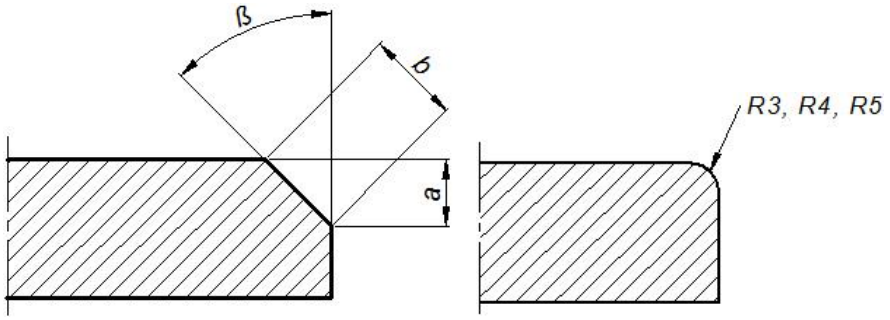


Figure 1. Bevel dimensions

1.3. Design

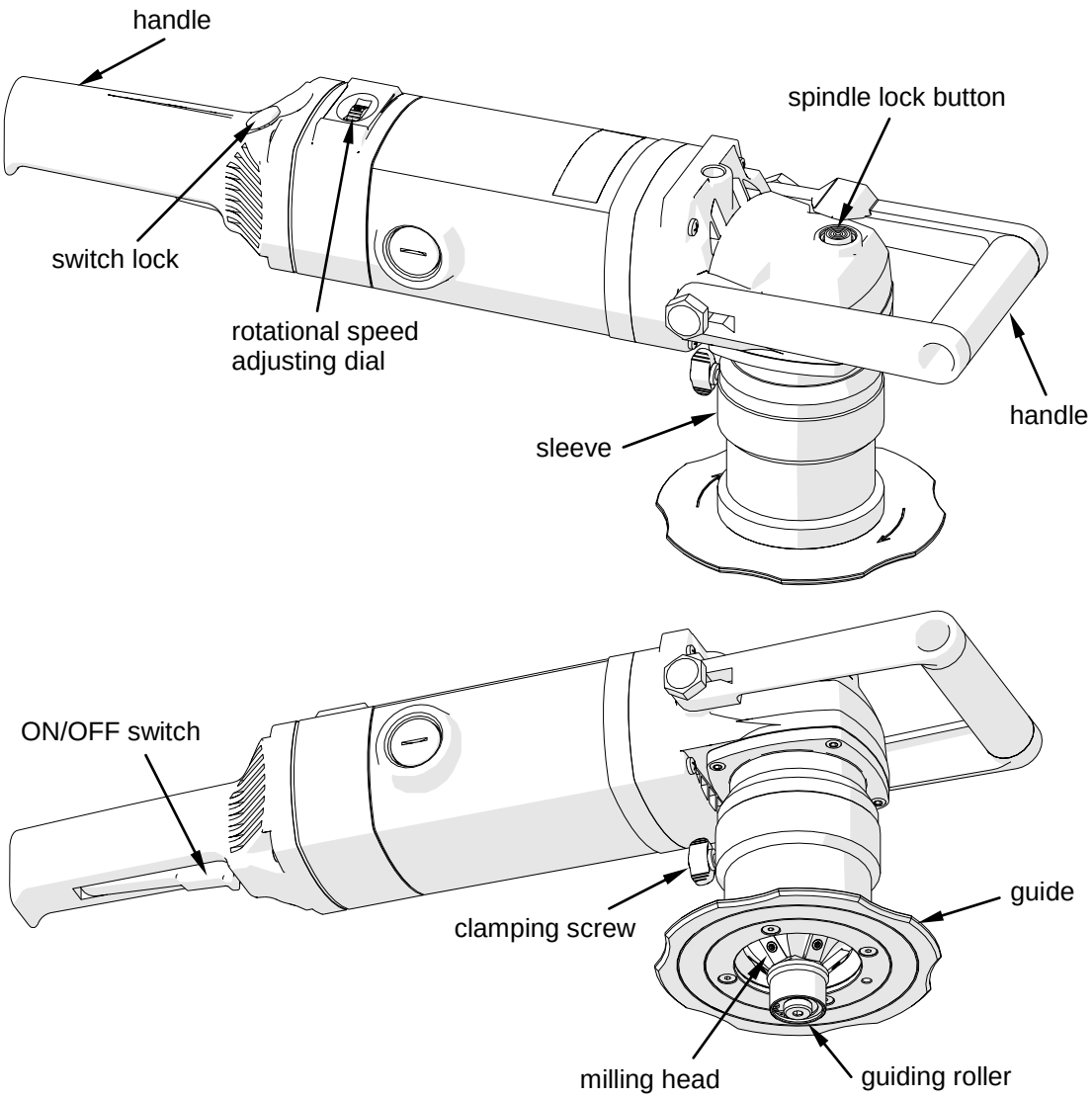


Figure 2. BM-16 bevelling machine design

1.4. Equipment included

The BM-16 Bevelling Machine is supplied in a metal box. The included equipment consists of:

- bevelling machine (without milling head) – 1 unit
- metal box – 1 unit
- 14 mm Allen key – 1 unit
- 5 mm Allen key – 1 unit
- 32 mm flat key – 1 unit
- Operator's Manual – 1 unit

2. SAFETY PRECAUTIONS

1. Before starting, read this Operator's Manual and complete proper occupational safety and health training.
2. Machine must be used only in applications specified in Operator's Manual.
3. Machine must be complete and all parts must be genuine and fully operational.
4. Power supply specifications must conform to those specified on rating plate.
5. Never carry machine by cord or yank it to disconnect plug from socket. It may cause power cord to break and result in electric shock.
6. Untrained bystanders must not be present near machine.
7. Before starting, check condition of machine and electrical installation, including power cord, plug, control components, and milling tools.
8. Keep machine dry. Exposing it to rain, snow, or frost is prohibited.
9. Keep work area well lit, clean, and free of obstacles.
10. Never use machine near flammable fluids or gases, nor in explosive environments.
11. Never use blunt or damaged tools.
12. Use only tools recommended by manufacturer and specified in Operator's Manual.
13. Mount cutting inserts and milling head securely. Remove adjusting keys and wrenches from work area before connecting plug to power socket.
14. Never use machine in upside down position with milling head facing up.
15. If cutting edge of insert is worn out, rotate insert in socket by 90° or 180° or, if all edges are worn out, replace with new insert specified in Operator's Manual.
16. Before every use, inspect machine to ensure it is not damaged. Check whether any part is cracked or improperly fitted. Make sure to maintain proper conditions that may affect machine operation.
17. Always use safety goggles, hearing protection, protective shoes, and protective clothing during operation. Do not wear loose clothing.
18. Using spindle lock button during operation is prohibited.
19. Do not touch moving parts or metal chips formed during milling. Prevent objects from being caught in moving parts.
20. After every use, remove metal chips from machine, particularly from milling head. Never remove metal chips with bare hands.
21. Maintain machine and tools with care. Cover steel parts with thin grease layer to protect them against rust when not in use for a longer period.

22. Perform all maintenance work only with power cord unplugged from power socket.
23. Perform all repairs only in service center appointed by seller.
24. If machine falls on hard surface, from height, is wet, or has other damage that could affect technical state of machine, stop operation and immediately send machine to service center for inspection.

WARNING! Safety rules must be closely observed.

3. STARTUP AND OPERATION

WARNING! Read safety precautions before starting.

3.1. Mounting and dismounting of milling head

Unplug the power cord from power socket. To mount the milling head (Figure 3a), place it on the spindle (*1*), press the spindle lock button (*2*), and tighten the head using 14 mm Allen key (*3*). Then, mount the roller (*4*) and tighten with 5 mm Allen key (*5*). To dismount the head (Figure 3b), loosen the clamping screw (*6*), unscrew the sleeve (*7*) and take out (*8*). Next, unscrew the roller using 5 mm Allen key (*9*) and dismount (*10*). Lock the spindle with 32 mm flat key (*11*), then unscrew the head using 14 mm Allen key (*12*) and dismount (*13*).

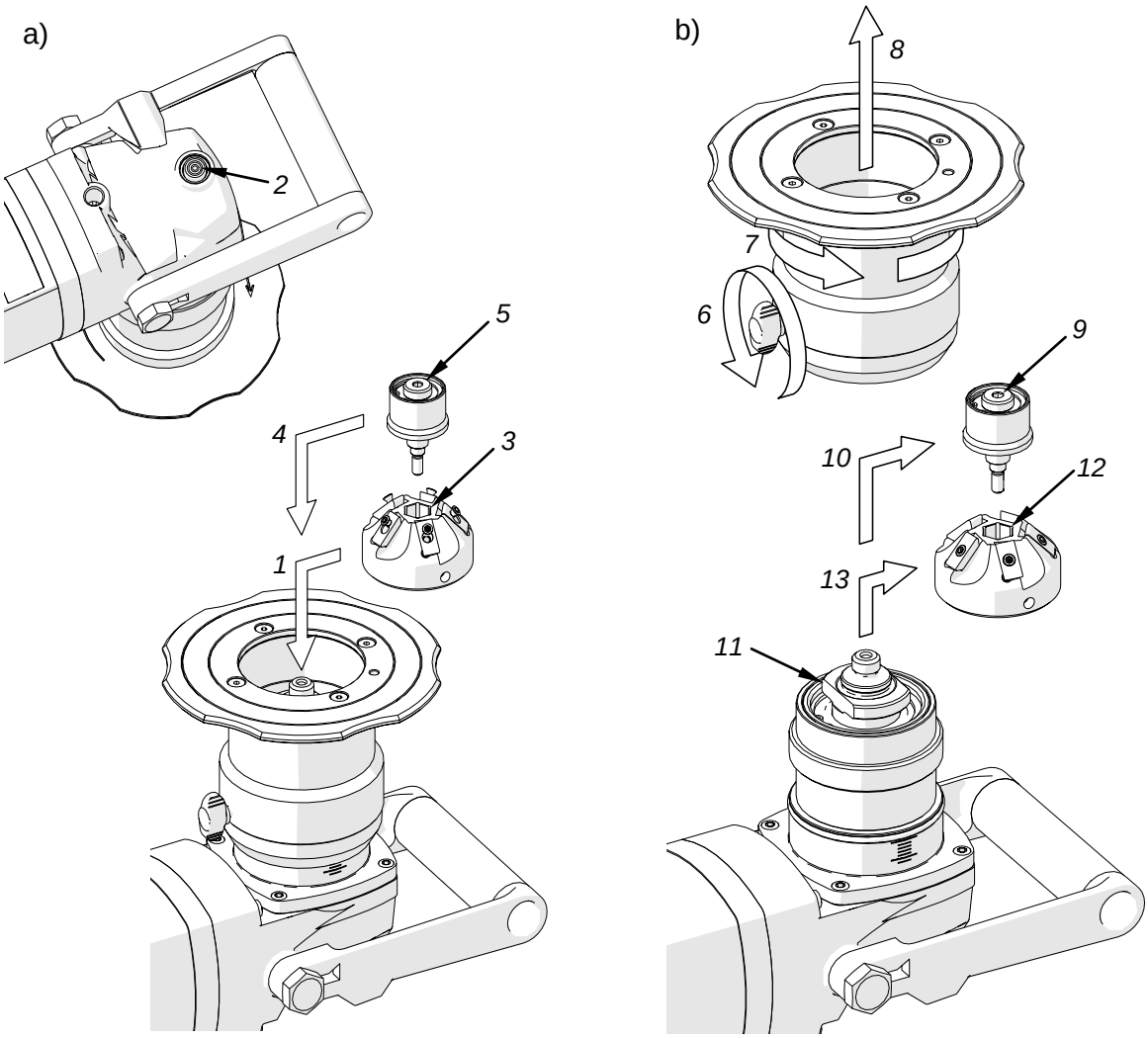


Figure 3. Method of mounting (a) and dismounting (b) of milling head

3.2. Adjusting bevel parameters

Before adjusting (Figure 4), unplug the power cord from power socket. Then, loosen the clamping screw (*1*), rotate the sleeve (*2*) in a way that the pitch (*3*) shows the required bevel height „a" (Table 1), and re-tighten the screw afterward.

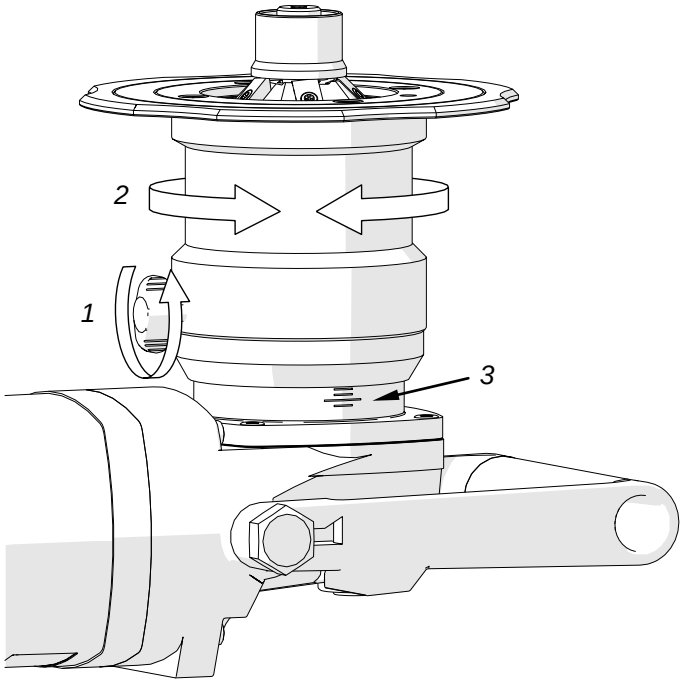


Figure 4. Method of adjusting bevel parameters

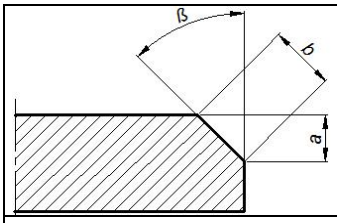
	**Milling head**								
	20°	22.5°	30°	37.5°	45°	50°	55°	60°	65°
Height "a" [mm]	**Width "b"** [mm]								
1	1.1	1.1	1.2	1.3	1.4	1.6	1.7	2.0	2.4
2	2.1	2.2	2.3	2.5	2.8	3.1	3.5	4.0	4.7
3	3.2	3.2	3.5	3.8	4.2	4.7	5.2	6.0	7.1
4	4.3	4.3	4.6	5.0	5.7	6.2	7.0	8.0	9.5
5	5.3	5.4	5.8	6.3	7.1	7.8	8.7	10.0	11.8
6	6.4	6.5	6.9	7.6	8.5	9.3	10.5	12.0	14.2
7	7.4	7.6	8.1	8.8	9.9	10.9	12.2	14.0	
8	8.5	8.7	9.2	10.1	11.3	12.4	13.9	16.0	
9	9.6	9.7	10.4	11.3	12.7	14.0	15.7		
10	10.6	10.8	11.5	12.6	14.1	15.6			
11	11.7	11.9	12.7	13.9	15.6				
11.5	12.2	12.4	13.3	14.5	16.3				
12	12.8	13.0	13.9	15.1					
13	13.8	14.1	15.0						

Table 1. Relation between bevel width and height of the offered milling heads

3.3. Adjusting guide for rounding edges

Unplug the power cord from power socket and in the manner described before loosen the clamping screw and rotate the sleeve to set the guide as shown in Figure 5. Then, after leveling the surface (*1*) with the radial cutting edge (*2*), re-tighten the clamping screw. Round a test edge and, if necessary, readjust the guide position.

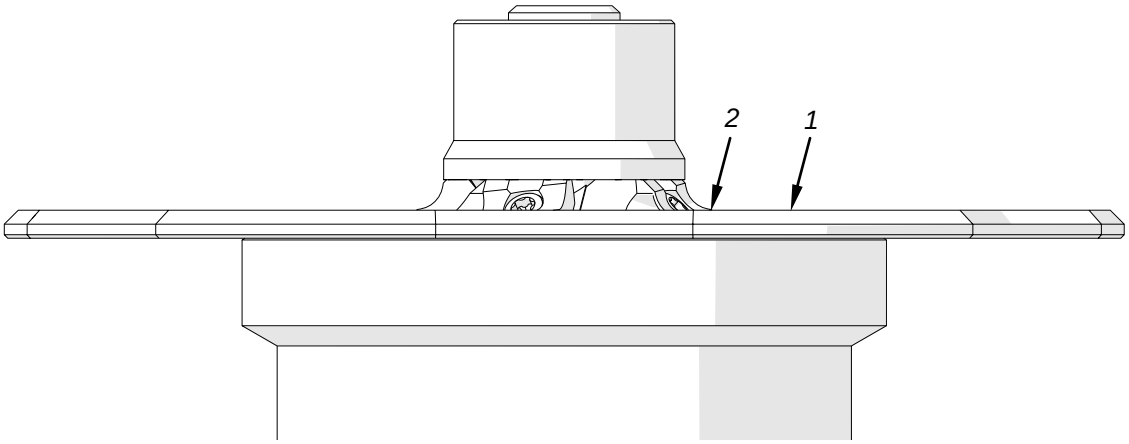


Figure 5. Guide adjusted for rounding edges

3.4. Preparation

Mount a milling head with cutting inserts and set the required bevel parameters. Then, using the rotational speed adjusting dial, set the speed corresponding to the type of the working material (Table 2).

Material type	Rotational speed
Aluminum, brass, plastics	setting 6 (5850 rpm)
Structural steel of standard quality, quality steel	settings 3–5 (3100–4500 rpm)

Table 2. Recommended rotational speeds

The speed adjusting dial allows for continuous control of the rotational speed in the range of 1800–5850 rpm (settings *1*–*6*). The relations between the setting and speed are: setting *1* – 1800 rpm, *2* – 2400 rpm, *3* – 3100 rpm, *4* – 3800 rpm, *5* – 4500 rpm, *6* – 5850 rpm.

When using structural steel of a standard quality or quality steel, set the speed to setting *4* and decrease it if intensive sparking occurs during operation.

3.5. Usage

Plug the power cord into power socket and place the machine on the left side of the working material in the manner shown in Figure 6. The milling head must not touch the working edge. The working material must be stable and well fixed.

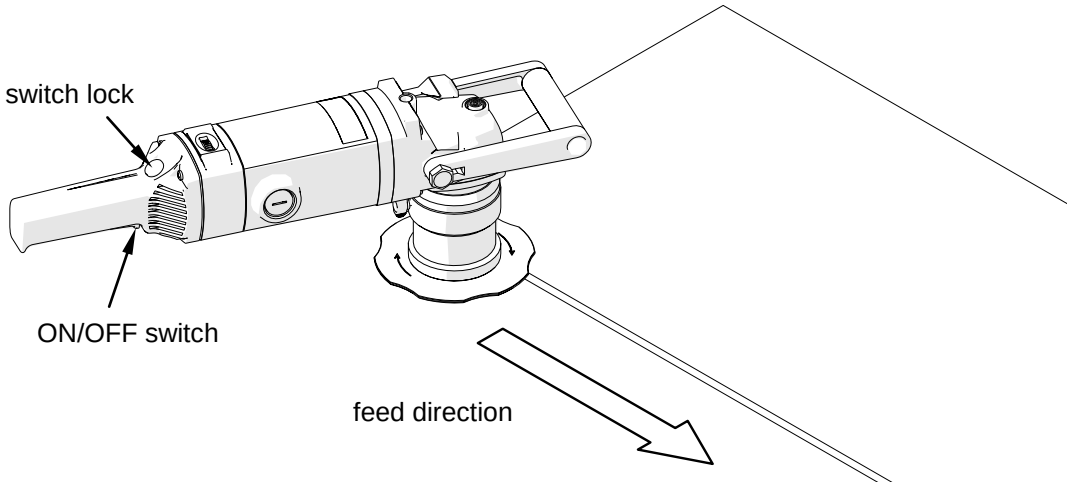


Figure 6. Machine placed on plate and proper feed direction

To start the motor, press the switch lock and the ON/OFF switch, and, with the ON/OFF switch pressed, release the lock. Wait several seconds until the machine reaches the required rotational speed, press the machine to the working surface using both hands, and slowly slide toward the edge until the tool starts to cut the steel. Operate according to the counter-rotation, by sliding the machine from left to right. The direction of the milling head rotation is indicated by the arrow on the guide.

Begin with accomplishing small bevels (3–4 mm, 0.12–0.16'') and increase the bevel width with gaining experience. It is recommended to bevel in at least two or three passes. The bevel width should be set to a value which will allow for the feed of 1 meter per minute without significant effort.

If the machine becomes overloaded, e.g. when the bevel width is too large for the material being machined or when the cutting inserts are blunt, the motor will automatically stop. However, prevent the motor from overloading by machining hard materials in multiple passes and replacing the inserts before they become blunt. Additionally, take periodic breaks during operation and keep the ventilation slots clean to prevent the motor from overheating because this can lead to damage of the windings.

Once the work is finished, turn off the motor by releasing the ON/OFF switch, wait until the rotation stops, and unplug the power cord from power socket.

3.6. Replacing cutting inserts

Unplug the power cord from power socket and, to achieve a better access to the head, loosen the clamping screw (*1*) and maximally lower the sleeve (*2*) by rotating it clockwise (Figure 7). Then, unscrew the bolt (*3*) using the screwdriver supplied with the milling head, and take out the cutting insert (*4*). Clean the socket and place the rotated insert again or replace with a new one if all four edges are worn out. Then, push and tighten the insert.

Before replacing cutting inserts for rounding edges, loosen the guiding roller (*5*) with 5 mm Allen key.

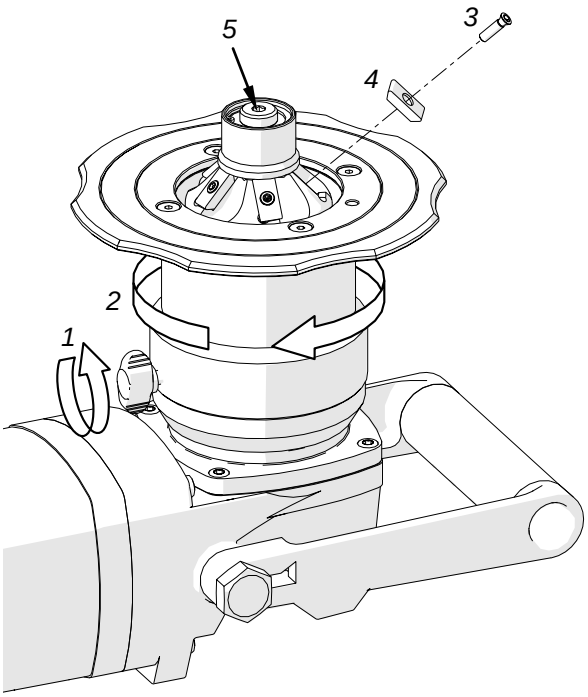


Figure 7. Method of replacing cutting inserts

Clean the threads once a week and, if necessary, grease the bolts that mount the inserts using an agent that will prevent the bolts from blocking (e.g. copper paste).

3.7. Replacing roller

Unplug the power cord from power socket. Then, place the machine in the manner shown in Figure 8b, press the spindle lock button (*1*), and unscrew the roller using 5 mm Allen key (*2*). Lock the spindle using the spindle lock button and screw in a new roller.

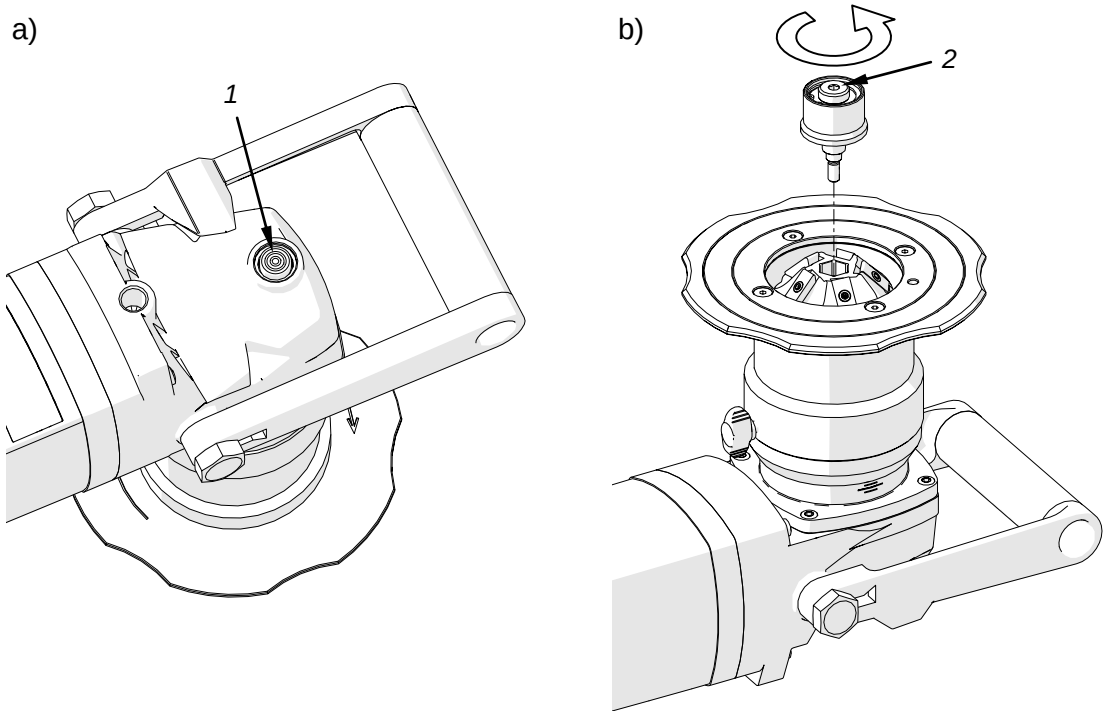


Figure 8. Method of replacing roller

3.8. Replacing brushes

Check the condition of the carbon brushes every 200 operational hours. If their length is less than 10 mm (0.4''), replace them with new ones. To do this, unplug the power cord from power socket, unscrew the cap, and take out the brush (Figure 9). Proceed as described also for the second brush located on the opposite side of the motor. To mount brushes, proceed in reverse order. After the replacement, run the motor without load for 20 minutes.

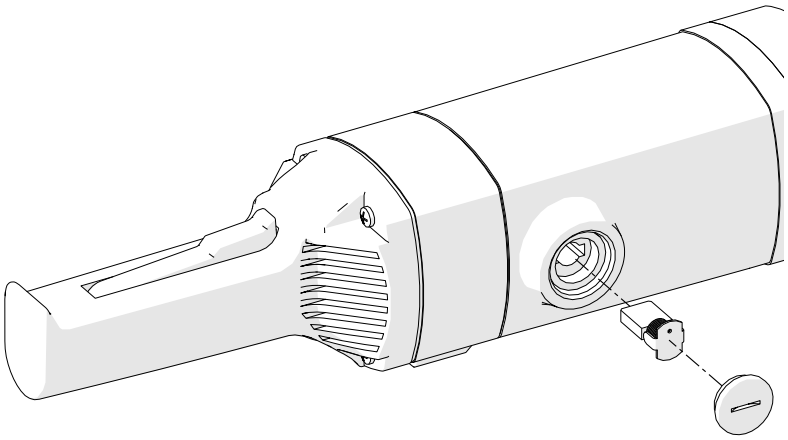


Figure 9. Method of replacing brushes

4. ACCESSORIES AND SPARE PARTS

4.1. Accessories

Part number	Name
BM16CMHR	Milling head for rounding
BM15CMH30	Milling head 30°
BM15CMH45	Milling head 45°
BM15CMH60	Milling head 60°
BM16CMH55	Milling head 55°
BM15CMH37.5	Milling head 37.5°
BM16CMH22.5	Milling head 22.5°
BM16CMH20	Milling head 20°
BM16CMH50	Milling head 50°
BM16CMH65	Milling head 65°
BM15RMHS	Bolt mounting insert for rounding
BM16BMHS	Bolt mounting insert for bevelling
BM15IR3	Cutting insert R3
BM15IR4	Cutting insert R4
BM15IR5	Cutting insert R5
BM15IS	Cutting insert for steel
BM15IA	Cutting insert for aluminum

4.2. Spare and wearing parts

Part number	Name
BM16-12	Guiding roller
BM16-24.32	Carbon brush for 110 V
BM16-24.32/2	Carbon brush for 230 V
BM16.36	5 mm Allen key
BM16.37	14 mm Allen key

5. DECLARATION OF CONFORMITY

EC Declaration of Conformity

We

JEI SOLUTIONS LTD
Unit 30 Newhallhey Business Park
Newhallhey Rd, Rawtenstall
Rossendale, Lancs, UK, BB4 6HR

declare with full responsibility that product:

BM-16 BEVELLING MACHINE

which the declaration applies to is in accordance with the following standards:

- EN 50144-1
- EN 55014

and satisfies safety regulations of the guidelines: 2004/108/EC, 2006/95/EC, 2006/42/EC.

Rossendale, 11 October 2012

David McFadden
Managing Director

6. QUALITY CERTIFICATE

Machine control card

BM-16 BEVELLING MACHINE

Serial number .....

Quality control .....

Adjustments, inspections

Quality control .....

7. WARRANTY CARD

WARRANTY CARD No.....

..... in the name of Manufacturer warrants the BM-16 Bevelling Machine to be free of defects in material and workmanship under normal use for a period of 12 months from date of sale.

This warranty does not cover cutting inserts, damage or wear that arise from misuse, accident, tempering, or any other causes not related to defects in workmanship or material.

Date of production .....

Serial number .....

Date of sale .....

Signature of seller.....

1.04 / 7 February 2013

WE RESERVE THE RIGHT TO MAKE CORRECTIONS
AND MODIFICATIONS IN THIS MANUAL WITHOUT PRIOR NOTICE